RECEIVED
CENTRAL FAX CENTER

MAR 12 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Carl A. Reiser

Serial No.: 10/765,737

Filed: January 27, 2004

Title: Preventing Fuel Starvation of a Fuel Cell Stack

Examiner: O'Neill, Karie Amber

Art Unit: 1745

Docket No.: C-3363

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Paul Margiott declares that:

1. He resides at 32 Sele Drive, South Windsor, Connecticut 06074.

2. He has a Bachelor of Science degree in Chemical Engineering and a Master of Science Degree in Mechanical Engineering and has been working in the field of fuel cells and related arts for over 23 years, and is currently engaged in that field on behalf of UTC Power Corporation, South Windsor, CT.

3. He has reviewed and familiarized himself with the claims of the subject application and those portions of Rueegge et al U.S. 2002/0055023 A1 (Rueegge), Skidmore et al U.S. 2005/0136296 A1 (Skidmore), and Kawasumi et al U.S. 2002/0001741 A1 (Kawasumi) that are relevant to the claims of the subject application.

4. The reactant exhausts are combined in Rueegge (middle of Abstract; para. 0008; claim 1), there is no measurement made in Rueegge which indicates any characteristic of fuel exhaust flow, but only flow of a fuel/air mixture.

5. In Fig. 6 of Rueegge (para. 0027), "A value 8, by means of which the gas pressure difference which acts on the pressure regulator 4 can be varied, is connected in parallel with the connection points 31 and 32. The valve 8 can be controlled with...the mass flow sensor 5...." One skilled in the fuel cell and related arts would understand this to mean that the rate of leakage through valve 8 is altered by mass flow of fuel ENTERING the fuel cell, to thereby tailor flow through valve 22 of the pneumatic device 20 (Fig. 2, para. 0020) to hold the inlet fuel flow constant (para. 0027). One skilled in the fuel cell and related arts would also understand that the

valve 8, by leaking some of the flow of gas around the diaphragm 30 results in a variable aperture (30 plus 8, together). Variation in pressure across a variable aperture cannot indicate variation in flow rate, so that pressure across the diaphragm 30 cannot indicate reactant gas exhaust flow rate.

6. Because of the facts set forth in paragraphs 4 and 5, above, Rueegge would not teach or suggest to one skilled in the fuel cell and related arts that flow of fuel exhaust and particularly direction of fuel exhaust flow, should be sensed.

7. Skidmore teaches only three events that inactivate or isolate the stack: (a) charging complete (106, Fig. 2), (b) low power demand (124, Fig. 3), and (c) unstable fuel cell (124, Fig. 3) determined by voltage and current (paras. 0053 and 0054). In Skidmore, the lack of fuel flow is CAUSED concurrently with isolating (disconnecting) the fuel cell stack from any load by the same event (108, Fig. 2; claim 13). There is no suggestion that absence of fuel flow (and particularly fuel exhaust outflow) CAUSE the fuel cell to be isolated. Skidmore would not suggest to one skilled in the fuel cell and related arts that disconnecting a fuel cell stack should be in response to the direction of fuel exhaust flow.

8. In Skidmore, because fuel flow is stopped and the stack disconnected from the load in common, as a result of the same event, at the same time, the load would be disconnected before the outward flow of fuel exhaust gas would cease, due to the delay of fuel flow through the stack. Therefore, Skidmore does not teach one skilled in the fuel cell arts that the act of disconnecting a fuel cell stack from a load is in the event that there is no flow of fuel exhaust toward ambient.

9. The fuel input regulation of Rueegge together with the common disconnect of the stack and shut down of both reactants in Skidmore would not provide a suggestion or motivation to one skilled in the fuel cell and related arts to modify Woods to disconnect the stack if there is no fuel exhaust flow; and modifying Woods in any manner with teachings of Rueegge and Skidmore, would not provide inventions of claims 1 and 2 of the subject application.

10. Kawasumi uses the pressure (25, Fig. 1) of fuel at the fuel exit of the stack to estimate (S1, S2, Fig. 3) a boiling point (paras. 0040, 0041) to control flow of feedstock to a reformer. Scanning the disclosure of Kawasumi reveals no function for pressure sensor 24. A single pressure sensor will not indicate flow, and particularly not flow direction.

11. Kawasumi does not teach or suggest to one skilled in the fuel cell and related arts that "it is important to sense the flow of gases between the flow fields and ambient" (emphasis added).

12. The single pressure sensor of Kawasumi together with the common disconnect of the stack and shut down of both reactants in Skidmore would not provide a motivation or suggestion to one skilled in the fuel cell and related arts to modify Woods to disconnect the stack if there is no fuel exhaust flow; and modifying Woods in any manner with teachings of Kawasumi and Skidmore would not provide the inventions of claims 1 and 2 of the subject application.

13. All statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Paul Marglott

3/9/07
Date